

CLAIMS

1. A UV sun screening composition suitable for cosmetic or topical pharmaceutical use which comprises an amount of one or more organic components which are photosensitive and/or which are degraded and/or in which degradation is induced by another ingredient of the composition, and an amount of TiO₂ and/or ZnO which has been doped with one or more other elements and/or reduced zinc oxide, this composition having a rate of loss of UV absorption at least 5% less than that of a composition having the same formulation except that it does not contain the said TiO₂ and/or ZnO which has been doped with another element or the said reduced zinc oxide.

2. A composition according to claim 1 which is suitable for cosmetic use.

3. A composition according to claim 1 or 2 which contains TiO₂ and/or ZnO which has not been doped or reduced.

4. A composition according to any one of the preceding claims wherein the dopant is manganese, vanadium, chromium or iron.

5. A composition according to claim 4 wherein the dopant is Mn³⁺.

6. A composition according to any one of the preceding claims wherein the dopant is present in an amount from 0.05% to 10 mole %.

7. A composition according to claim 6 wherein the dopant is present in an amount from 0.5 to 2 mole % by weight.

8. A composition according to any one of the preceding claims which comprises doped titanium dioxide.

9. A composition according to any one of the preceding claims wherein the titanium dioxide is in rutile form.

10. A composition according to any one of claims 1 to 3 which comprises reduced zinc oxide.

11. A composition according to any one of the preceding claims which comprises 0.5 to 20 mole % by weight of the doped TiO₂ or ZnO or reduced ZnO.

12. A composition according to any one of the preceding claims wherein the doped or reduced oxide has a particle size from 1 to 200 nm.

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13. A composition according to any one of claims 1 to 11 wherein the doped or reduced oxide has a particle size from 100 to 500 nm.

14. A composition according to any one of the preceding claims wherein one or more of the said organic components is a UV sunscreen agent.

15. A composition according to claim 14 wherein the organic sunscreen agent absorbs UV light in the UVA region.

16. A composition according to claim 14 or 15 wherein the organic sunscreen agent is a paraaminobenzoic acid, ester or derivative thereof, a methoxy cinnamate ester, a benzophenone, a dibenzylmethane, an alkyl- β,β -phenyl acrylate, a triazine, a camphor derivative, an organic pigment, a silicone based sunscreen agent or 2-phenylbenzimidazoyl-5 sulphonic acid or phenyldibenzimidazoyl sulphonic acid.

17. A composition according to any one of the proceeding claims wherein the said rate of loss of UV absorption is a rate of loss of UVA absorption.

18. A composition according to any one of the proceeding claims wherein the rate of change of the ratio of the loss of UVA absorption to the loss of UVB absorption is less than that of a composition of the same formulation except that the TiO₂ and /or ZnO present is not doped.

19. A composition according to claim 17 wherein the rate of change of the ratio is greater because the rate of loss of UVA absorption is reduced.

20. A composition according to any one of the preceding claims which comprises 0.1% to 20% by weight of organic sunscreen agent(s).

21. A composition according to any one of the preceding claims which contains one or more of a fatty substance, organic solvent, silicone, thickener, demulsant, UVB sunscreen agent, antifoaming agent, moisturising agent, perfume preservative, surface activation filler, sequestrant, anionic, cationic, nonionic or amphoteric polymer, propellant, alkalisng or acidifying agent, colorant or metal oxide pigment.

22. A composition according to any one of the preceding claims which is a sunscreen.

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23. A composition according to any one of the preceding claims which is in the form of a lotion, gel, dispersion, cream, milk, powder or solid stick.

24. A composition according to claim 22 or 23 which comprises a water-dispersible and an oil-dispersible TiO₂ and/or ZnO.

25. A composition according to any one of the preceding claims wherein the TiO₂ and/or ZnO is coated with an inorganic or organic solvent.

26. A composition according to claim 1 substantially as hereinbefore described.

27. Use of a doped or reduced TiO₂/ZnO as defined in any one of claims 1 and 4 to 7 to reduce the concentration of one or more organic UV sunscreen agents or other ingredient which is photosensitive and/or is degraded and/or in which degradation is induced by another ingredient in a cosmetic UV screening composition.

28. Use of a doped or reduced TiO₂/ZnO as defined in any one of claims 1 and 4 to 7 to reduce the rate of loss in UV absorption of a sunscreen composition.

29. Use of a doped or reduced TiO₂/ZnO as defined in any one of claims 1 and 4 to 7 to reduce the rate of change of the ratio of the loss of UVA absorption to the loss of UVB absorption in a cosmetic UV screening composition which comprises one or more organic components which are photosensitive and/or which are degraded by another ingredient of the composition in a relation a composition of the same formulation except that the TiO₂ and /or ZnO present is not doped or reduced.

30. A method of increasing the effectiveness of an organic UV sunscreening composition, which comprises one or more components which are photosensitive and/or are degraded and/or in which degradation is induced by another ingredient of the composition which comprises incorporating into the composition a doped or reduced TiO₂/ZnO as defined in any one of claims 1 and 4 to 7.

31. A method of reducing the production of a toxic compound in a UV sunscreening composition which comprises incorporating therein doped TiO₂ and/or doped or reduced ZnO as defined in any one of claims 1 and 4 to 7.